AMENDMENTS TO THE CLAIMS

Please amend claims 1-3, such that the status of the claims is as follows:

1. (Currently Amended) A rotational control apparatus comprising:

a first assembly rotatably mounted to a first shaft of a first support mount;

a second assembly rotatably mounted to the first assembly, wherein the second assembly is axially moveable relative to the first assembly, the first and second assemblies having respective ~~coaxial~~ circumferential surfaces adjacent to and spaced from one another, the first and second assemblies further having respective ~~axial~~ radial surfaces that frictionally engage one another when the second assembly is in a first axial position, and the respective ~~axial~~ radial surfaces of the first and second assemblies disengage when the second assembly is in a second axial position, wherein the second assembly is capable of rotation independent of the first assembly when the second assembly is in the second axial position; and

an eddy current drive comprised of a first eddy current coupling assembly and a second eddy current coupling assembly, the first eddy current coupling assembly associated with the ~~coaxial~~ circumferential surface of the first assembly and the second eddy current coupling assembly associated with the ~~coaxial~~ circumferential surface of the second assembly adjacent to and spaced from the first eddy current coupling assembly, wherein the second eddy current coupling assembly is adjacent the first eddy current coupling assembly with an air gap therebetween.

2. (Currently Amended) The rotational control apparatus of claim 1 wherein the second eddy current coupling assembly comprises:

a plurality of ~~coaxial~~ circumferential electrically insulated rings arranged in an inner cavity of the second assembly; and

a circumferential non-magnetic ring ~~coaxially~~ radially positioned adjacent to the electrically insulated rings.

3. (Currently Amended) The rotational control apparatus of claim 1 wherein the first eddy current coupling assembly comprises:

a pair of back iron tabs attached to the ~~coaxial~~ circumferential surface of the first assembly, the back iron tabs spaced circumferentially apart and opposed therefrom; and

a pair of magnets secured to each back iron tab.

4. (Original) A rotational control apparatus comprising:

a support mount having an axially extending shaft;

a first assembly rotatably mounted on the shaft, the first assembly being comprised of a first member and a second member together, the first member having an outer radial surface portion, an outer circumferential surface spaced from the outer radial surface portion, a first outer axial surface portion, and a second outer axial surface portion, wherein the outer radial surface portion is configured to engage a drive source, the outer circumferential surface comprises a first eddy current assembly, the first outer axial portion defines a cavity, and wherein the second member is mounted to the second axial surface portion of the first member, the second member comprising a first friction surface;

a piston slidably mounted to the second member, the piston axially movable within the cavity between a first position and a second position, wherein the piston is biased toward the first position;

a third member rotatably mounted relative to the piston, the third member capable of rotational movement independent of the first assembly, the third member comprising an inner radial surface portion radially spaced from and coaxial to the outer circumferential surface of the first member, an annular cavity spaced from the inner radial surface wherein a second eddy current assembly is positioned in the annular cavity, the third member further comprising a second friction surface adjacent to the first friction surface of the second member, wherein the first and second friction surfaces engage one another when the piston is in the first position, and the first and second friction surfaces are spaced relative to one another when the piston is in the second position;

wherein the second eddy current assembly comprises:

a laminated back iron radially arranged in the annular cavity; and

a non-magnetic band connected to the laminated back iron, the non-magnetic band positioned between the laminated back iron and the first eddy current assembly.

5. (Original) The rotational control apparatus of claim 4 wherein each the laminated back iron comprises a plurality of electrically insulated magnetic bands stacked within the annular cavity, each magnetic including an insulating coating deposited on a top surface and a bottom surface of the magnetic band.

6. (Original) The rotational control apparatus of claim 5 wherein the plurality of bands comprise steel bands.

7. (Original) The rotational control apparatus of claim 5 wherein each band has a thickness of about 0.009 inches to about 0.019 inches.

8. (Original) The rotational control apparatus of claim 4 wherein the non-magnetic band is comprised of an aluminum or copper band.

9. (Original) The rotational control apparatus of claim 4 wherein the non-magnetic band and a spacing between the second eddy current assembly and the outer circumferential surface portion of the first member has a combined thickness of about 0.060 inches.

10. (Original) An improved rotational control apparatus including a support mount having a shaft, a first member and second member comprising a first rotatable assembly, wherein the first rotatable assembly is rotatably mounted to the shaft and the second member defines a cavity, a piston slidably mounted to the second member and axially movable within the cavity between a first position and a second position, and a third member rotatably mounted relative to the piston and capable of rotational movement independent of the first rotatable assembly, the improvement comprising:

a first eddy current assembly mounted to an outer circumferential surface of the first member; and

a second eddy current assembly radially arranged within an inner cavity of the third member, the second eddy current radially spaced from and coaxial to the first eddy current assembly by a gap wherein the inner radial surface portion defines an inner cavity of the third member.

11. (Original) The improvement of claim 10 wherein the second eddy current assembly comprises:

a plurality of electrically insulated metal rings of magnetically conductive material radially arranged in the inner cavity of the third member adjacent the inner radial surface portion; and

an intermediate ring of non-magnetic material connected to one of the insulated rings, the intermediate ring positioned between the plurality of insulated rings and the first eddy current assembly.

12. (Original) The improvement of claim 11 wherein each insulated metal ring comprises a top surface and a bottom surface, and an insulating coating is deposited on the top and bottom surfaces of the metal ring.

13. (Original) The improvement of claim 11 wherein the plurality of insulated metal rings are stacked in the inner cavity.

14. (Original) The improvement of claim 13, and further comprising a retaining ring to hold the insulated metal rings in the inner cavity.

15. (Original) The improvement of claim 10 wherein the first eddy current assembly comprises:

a pair of back iron tabs attached to the outer circumferential surface of the first member, the back iron tabs spaced circumferentially apart and opposed therefrom; and

a pair of magnets secured to each back iron tab.

16. (Original) A rotational control apparatus comprising:

a support mount adapted to be maintained in a position fixed against rotation;

a first rotatable assembly including a first portion adapted to be interconnected to a driving source and a second portion axially spaced from the first portion, the second portion further including an outer circumferential surface;

a first bearing unit interposed between the support mount and the first rotatable assembly, with the first rotatable assembly being rotatably supported by the support mount through the first bearing unit;

a first engagement surface provided at the second portion of the first rotatable assembly for concurrent rotation with the first rotatable assembly;

a second rotatable assembly having first and second sections, the first section of the second rotatable assembly including a radially extending portion defining an inner radial surface portion aligned with the outer circumferential surface of the first rotatable assembly and the inner radial surface portion defining an inner cavity of the second rotatable assembly, the second section of the second rotatable assembly extending radially inwardly from the first section and being axially spaced from the first portion of the first rotatable assembly;

a second engagement surface provided at the first section of the second rotatable assembly;

a piston positioned axially between the first portion of the first rotatable assembly and the second section of the second rotatable assembly, with the piston being axially moveable relative to the first rotatable assembly;

means for axially moving the piston relative to the first rotatable assembly to cause selective engagement between the first and second engagement

surfaces in order to interconnect the first and second rotatable assemblies;

a second bearing unit interconnecting the piston and the second rotatable assembly for concurrent axial movement relative to the first rotatable assembly while permitting relative rotation between the piston and the second rotatable assembly;

a first eddy current assembly radially mounted to the outer circumferential surface of the second portion of the first rotatable assembly;

a second eddy current assembly radially mounted in the inner cavity of the second rotatable assembly, the second eddy current assembly radially spaced from and coaxial to the first eddy current assembly;

wherein the second eddy current assembly comprises:

a plurality of electrically insulated rings radially arranged in the inner cavity of the second rotatable assembly adjacent the inner radial surface portion; and

an intermediate ring of non-magnetic material connected to one of the electrically insulated rings, the intermediate ring positioned between the plurality of electrically insulated rings and the first eddy current assembly.

17. (Original) The rotational control apparatus of claim 16 wherein each electrically insulated ring comprises a top surface and a bottom surface, and an insulating coating is deposited on the top and bottom surfaces of the electrically insulated ring.

18. (Original) The rotational control apparatus of claim 16 wherein the plurality of electrically insulated rings are stacked in the inner cavity.

19. (Original) The rotational control apparatus of claim 18, and further comprising a retaining ring to hold the electrically insulated rings in the inner cavity.

20. (Original) A cooling system for use in a vehicle, the cooling system comprising:

a support mount including a journal shaft;

a first assembly rotatably mounted to the shaft, the first assembly including a first engagement surface and having an inner cavity with a radially disposed outer wall;

a piston positioned axially within the inner cavity wherein the piston is slidably movable with respect to the first assembly;

a second assembly rotationally related to the piston, the second assembly having a radially disposed inner wall and a second engagement surface;

a first eddy current coupling assembly radially mounted to the first assembly and disposed adjacent the second assembly; and

a second eddy current coupling assembly radially mounted adjacent the inner wall of the second assembly wherein the second eddy current coupling assembly lies adjacent the first eddy current coupling assembly with an air gap therebetween, the second eddy current coupling assembly comprising:

a plurality of electrically insulated rings radially arranged adjacent the inner wall of the second assembly; and

an intermediate ring radially disposed between the electrically rings and the air gap; and

means for axially moving the piston relative to the first assembly to cause selective engagement between the first and second engagement

surfaces when the piston is axially moved to selectively interconnect the first and second assemblies.

21. (Original) The cooling system of claim 20 wherein the second assembly is slidable between a first position and a second position when the piston is axially moved.

22. (Original) The cooling system of claim 21 wherein the first and second engagement surfaces are engaged when the second assembly is in the first position.

23. (Original) The cooling system of claim 21 wherein the first and second engagement surfaces are disengaged when the second assembly is in the second position.

24. (Original) The cooling system of claim 21 wherein the first and second eddy current coupling assemblies comprise an eddy current drive which rotates the second assembly when the second assembly is in the second position.

25. (Original) The cooling system of claim 20 wherein the first eddy current coupling assembly is comprised of a back iron tab and a plurality of magnets, the back iron tab mounted to the first assembly and the plurality of magnets disposed adjacent the air gap.

26. (Original) The cooling system of claim 20 wherein each electrically insulated ring comprises an insulating coating deposited on a top surface and a bottom surface of the ring.

27. (Original) A rotational control apparatus comprising:

a support mount including a shaft;

a first rotational assembly rotatably mounted to the shaft, the first rotational assembly including a sheave adapted to be interconnected to a drive

source, a sleeve housing axially spaced from the sheave, and a first engagement surface provided at the sleeve housing of the first rotational assembly;

a first bearing unit interposed between the support mount and the first rotational assembly, with the first rotational assembly being rotatably mounted to the shaft through the first bearing unit;

a second rotational assembly rotationally related to the piston, the second rotational assembly having an inner cavity with a radially disposed inner wall and a second engagement surface;

a piston positioned axially between the first rotational assembly and the second rotational assembly, the piston including a radial portion and an inner axially extending portion with the sleeve housing of the first rotational assembly slidably supporting the axially extending portion of the piston such that the piston is axially movable relative to the first rotational assembly;

at least one spring interposed between the sleeve housing and the radial portion of the piston;

a second bearing unit interposed between the axially extending portion of the piston and the second rotational assembly, the second bearing unit interconnecting the piston and the second rotational assembly for permitting relative rotation between the piston and the second rotational assembly;

means for axially moving the piston relative to the first rotational assembly to cause selective engagement between the first and second engagement surfaces when the piston is axially moved to selectively interconnect the first and second rotational assemblies and move the

second rotational assembly between a first position and a second position;

an eddy current drive comprised of a first eddy current coupling assembly and a second eddy current coupling assembly, the first eddy current coupling assembly associated with an outer circumferential surface of the first rotational assembly and the second eddy current coupling assembly associated with the second rotational assembly adjacent to and spaced from the first eddy current coupling assembly, wherein the second eddy current coupling assembly lies adjacent the first eddy current coupling assembly with an air gap therebetween, the second eddy current coupling assembly comprises:

a plurality of coaxial insulated rings arranged in the inner cavity of the second rotational assembly adjacent the inner wall; and

a non-magnetic ring coaxially positioned adjacent to the insulated rings;

wherein when the second rotational assembly is in the first position the first and second engagement surfaces are engaged such that the first and second rotational assemblies rotate with respect to the support mount at a first rotational speed; and

wherein when the second rotational assembly is in the second position the first and second engagement surfaces are disengaged such that the first rotational assembly rotates with respect to the support mount and the eddy current drive rotates the second rotational assembly with respect to the piston at a second rotational speed.

28. (Original) The rotational control apparatus of claim 27 wherein the first eddy current coupling assembly is comprised of a pair back iron tabs with a pair of magnets attached to each back iron tab such that the magnets are disposed adjacent the air gap.

29. (Original) A rotational control apparatus for selectively interconnecting first and second relatively rotatable members, the rotational control apparatus comprising:

a support mount including a shaft, the support mount adapted to be maintained in a fixed position wherein the first rotatable member is rotatably mounted to the shaft;

a piston positioned axially between the first rotatable member and the second rotatable member wherein the second rotatable member is rotationally related to the piston, the piston being axially movable relative to the first rotatable member to cause selective interconnection between the first and second rotatable members and move the second rotatable member between a first position and a second position;

an eddy current drive comprised of a first eddy current coupling assembly and a second eddy current coupling assembly, the first eddy current coupling assembly associated with an outer circumferential surface of the first rotatable member and the second eddy current coupling assembly associated with the second rotatable member adjacent to and spaced from the first eddy current coupling assembly, wherein the second eddy current coupling assembly is adjacent the first eddy current coupling assembly with an air gap therebetween, the second eddy current coupling assembly comprises:

a plurality of coaxial insulated rings arranged in the inner cavity of the second rotatable member adjacent the inner wall; and

a non-magnetic ring coaxially positioned adjacent to the insulated rings;

wherein when the second rotatable member is in the first position the first and second members are interconnected such that the first and second

rotatable members rotate with respect to the support mount at a first rotational speed; and

wherein when the second rotatable member is in the second position the first and second rotatable members are not interconnected such that the first rotatable member rotates with respect to the support mount and the eddy current drive rotates the second rotatable member with respect to the piston at a second rotational speed.